FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	M122434	Client:	Alaskan Copper Works
Date Received:	04/24/09	Project:	Abrasive Saw, PO M122434
Date Extracted:	04/28/09	Lab ID:	904256-01 x100 and 904256-01 x500
Date Analyzed:	04/28/09	Data File:	904256-01 x100.049 and 904256-01 x500.053
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	92	60	125
Holmium	103	60	125

Analyte:	Concentration mg/kg (ppm)
Chromium	114,000
Arsenic	<100
Selenium	<100
Silver	<100
Cadmium	<100
Barium	<100
Lead	<100

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Alaskan Copper Works
Date Received:	Not Applicable	Project:	Abrasive Saw, PO M122434
Date Extracted:	04/28/09	Lab ID:	I9-175 mb
Date Analyzed:	04/28/09	Data File:	I9-175 mb.035
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	99	60	125
Indium	89	60	125
Holmium	99	60	125

Analyte:	Concentration mg/kg (ppm)
Chromium	<1
Arsenic	<1
Selenium	<1
Silver	<1
Cadmium	<1
Barium	<1
Lead	<1

Date of Report: 05/01/09
Date Received: 04/24/09
Project: Abrasive Saw, PO M122434, F&BI 904256
Date Extracted: 04/28/09
Date Analyzed: 04/29/09

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
M122434 d 904256-01	<2
Method Blank	<0.2

Date of Report: 05/01/09
Date Received: 04/24/09
Project: Abrasive Saw, PO M122434, F&BI 904256

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 904234-02 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Chromium	mg/kg (ppm)	10.1	11.2	10	0-20
Arsenic	mg/kg (ppm)	1.58	1.60	1	0-20
Selenium	mg/kg (ppm)	<1	<1	nm	0-20
Silver	mg/kg (ppm)	<1	<1	nm	0-20
Cadmium	mg/kg (ppm)	<1	<1	nm	0-20
Barium	mg/kg (ppm)	25.7	27.1	5	0-20
Lead	mg/kg (ppm)	2.65	3.29	22 a	0-20

Laboratory Code: 904234-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Chromium	mg/kg (ppm)	50	10.1	103 b	50-150
Arsenic	mg/kg (ppm)	10	1.58	114	50-150
Selenium	mg/kg (ppm)	5	<1	122	50-150
Silver	mg/kg (ppm)	10	<1	95	50-150
Cadmium	mg/kg (ppm)	4	<1	105	50-150
Barium	mg/kg (ppm)	50	25.7	92 b	50-150
Lead	mg/kg (ppm)	50	2.65	101	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chromium	mg/kg (ppm)	50	112	70-130
Arsenic	mg/kg (ppm)	10	111	70-130
Selenium	mg/kg (ppm)	5	120	70-130
Silver	mg/kg (ppm)	10	93	70-130
Cadmium	mg/kg (ppm)	5	106	70-130
Barium	mg/kg (ppm)	50	98	70-130
Lead	mg/kg (ppm)	50	106	70-130

Date of Report: 05/01/09
Date Received: 04/24/09
Project: Abrasive Saw, PO M122434, F&BI 904256

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 904234-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	0.125	<0.2	108	111	50-150	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	0.125	109	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
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3012 16th Avenue West
Seattle, WA 98119-2029
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May 1, 2009

DUPLICATE

INVOICE #09ACU0501-1

Accounts Payable
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

RE: Project Abrasive Saw, PO M122434, F&BI 904256 - Results of testing requested by Gerry Thompson for material submitted on April 24, 2009.

1 sample analyzed for RCRA Metals by Method 200.8/1631E @ $150 per sample	$ 150.00
Rush Charges (3 day) 70% of $150.00	105.00
Amount Due	$ 255.00

904256

SAMPLE CHAIN OF CUSTODY ME 4/24/09

Page # ____ of ____

Send Report To Gerald A. Thompson

Company Alaskan Copper Works

Address 628 S. Hanford St

City, State, ZIP Seattle WA 98134

Phone # 206-571-6033 Fax # 206-382-4305

SAMPLERS (signature)

PROJECT NAME/NO. Abrasive saw

PO # M122434

REMARKS

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☒ RUSH ASAP
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	Arsenic				Notes
M122434	01	4/24	-	sand	1							X				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
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FORMS\COC\COC.DOC

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Gerald Thompson	ACW	4/24/09	2:19pm
Received by:		Michael Erdahl	FB	4/24/09	2:19pm
Relinquished by:					
Received by:					

Samples received at 23 °C

AKC-0005659

FRIEDMAN & BRUYA, INC.

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May 1, 2009

Gerry Thompson, Project Manager
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

Dear Mr. Thompson:

Included are the results from the testing of material submitted on April 24, 2009 from the Abrasive Saw, PO M122434, F&BI 904256 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
ACU0501R.DOC